

Pest Profile

Updated 10/05/2007

Common Name: Light Brown Apple Moth (LBAM)

Scientific Name: *Epiphyas postvittana* (Walker)

Order and Family: Lepidoptera, Tortricidae

Distribution in California Counties: Alameda, Contra Costa, Los Angeles, Marin, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, and Solano.

Background: This moth is originally from Australia, and has become established in New Zealand, New Caledonia, Hawaii and the British Isles. Its discovery in California is a new North American record.

Description: Adults are light brown, yellowish moths with varying amounts of darker brown, with a wingspan of 16-25 mm (Fig. 1). Females are larger than males, and usually have less distinct markings. Eggs are pale white and deposited slightly overlapping each other in groups of 20-50. Larvae are green, about 18 mm long at maturity. They are superficially similar to other native tortricid larvae and DNA analysis is necessary to confirm their identity. Pupae are brown, about 11 mm long.



Figure 1. LBAM adults, female (left) and male (right). Photo courtesy of SARDI, Greg Baker.

Hosts: LBAM has been recorded from over 2,000 plants. Some notable trees are apple, pear, peach, apricot, nectarine, citrus, persimmon, cherry, almond, avocado, oak, willow, walnut, poplar, cottonwood, coast redwood, Monterey pine, and eucalyptus. Some common shrub and herbaceous hosts are grape, kiwifruit, strawberry, berries (blackberry, blueberry, boysenberry, raspberry), corn, pepper, tomato, pumpkin, beans, cabbage, carrot, alfalfa, rose, camellia, jasmine, chrysanthemum, clover, lupine, and plantain.

Life Cycle and Damage: Development is continuous, with no true dormancy. In Australia, this moth typically has 3 generations per year and over-winters as a larva. Life cycle projections for the areas of California where it has been found indicate that 4 to 5 generations are possible. Females deposit egg masses containing 20-50 eggs on the upper leaf surface or on fruit. Productivity varies considerably, and females are capable of laying up to 1496 eggs in their lifetime, but the average has been recorded variously as 118 to 462 (Venette et al. 2003). Larvae disperse and construct silken shelters on the underside of leaves, usually near a midrib or large vein. Older larvae roll together leaves and buds or fruit with webbing. Damage to fruit occurs as surface feeding by the larvae. Larvae will occasionally enter the fruit to feed. Pupation takes place within the larval nests.

Survey Methods: There is a pheromone lure for the males, namely a 95:5 mixture of (E)-11-Tetradecenyl acetate: (E,E)-9, 11-Tetradecadienyl acetate, that can be used in sticky traps.

Management: Mating disruption, parasitoids and various insecticides have been used to control LBAM elsewhere.

Economic Impact: The impact on production costs for LBAM hosts could top \$100 million. It was estimated for Australia that LBAM causes AU\$21.1 million annually in lost production and control costs, or about 1.3% of gross fruit value, for apples, pears, oranges and grapes (Sutherst 2000). Applying this percentage to the 2005 gross value of these same crops in California of \$5.4 billion (USDA NASS 2006), the estimated annual production costs would be \$70.2 million. This estimate does not include economic costs to the nursery industry nor to other significant host crops in California such as apricots, avocados, kiwifruit, peaches and strawberries. If the same level of costs were incurred by these as for the previous four crops, the additional costs would be \$63.1 million, based on their 2005 gross value of \$4.8 billion. Therefore, the total lost production and control costs in California could be \$133 million for all of the crops mentioned above.

Exact economic impacts on international and domestic exports are uncertain at this time. California is the nation's leader in agricultural exports and in 2003 shipped more than \$7.2 billion in both food and agricultural commodities around the world (CASS 2004). Some countries have specific regulations against this pest, and many others consider it a regulated pest that would not be knowingly allowed to enter. Additional measures, such as preharvest treatments and postharvest disinfestation, would likely have to be taken to ensure that shipments to these countries are free from LBAM. In addition, LBAM is an exotic pest, i.e., it is not established in the continental United States, and therefore other states within the U.S. would likely impose restrictions on the movement of potentially infested fruits, vegetables and nursery stock. These restrictions could severely impact the domestic marketing of California agricultural products.

Environmental Impact: Establishment of this moth could cause direct environmental damage via increased pesticide use statewide by commercial and residential growers and via adverse feeding impacts on native plants. Populations of threatened and endangered plant species could be severely threatened or extirpated should this moth adapt to feeding on them.

Methods of Artificial Spread: The most significant route of artificial spread is likely to be on plants sold through nurseries and destined for commercial, ornamental and garden plantings. Other methods of spread are on green waste, fruit and conveyances.

Literature Cited

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